CLAIMS

We Claim:

1. A powder deposition device having an increased toning width, the powder deposition device comprising:

a first toning applicator for printing on a first area of a print medium; and

a second toning applicator for printing on a second area of the print medium.

2. The device of claim 1, wherein the first and second toning applicators are positioned to have a gap between the toning applicators, thereby creating an area where the toning applicators cannot print on the print medium.

3. The device of claim 1, wherein the first toning applicator overlaps with the second toning applicator, thereby allowing both toning applicators to print on a same area of the print medium.

4. The device of claim 3, wherein the first and second toning applicators each include a toning roller, and wherein the toning rollers are each positioned with a long axis of the respective toning roller substantially perpendicular to a direction of travel of the print medium.

5. The device of claim 3, wherein the first and second toning applicators overlap with each other, and wherein the first and second toning applicators are generally aligned with each other so as to form a first set of toning applicators, the device further comprising:

a third toning applicator for printing on the print medium;

a fourth toning applicator for printing on the print medium, wherein the third and fourth toning applicators overlap with each other, and where the third and fourth toning applicators are generally aligned with each other to form a second set of toning applicators; and

wherein the first and second sets of toning applicators are positioned so that a point on the print medium passes through at least one toning nip for the first set of toning applicators and at least one toning nip for the second set of toning applicators.

6. The device of claim 3, wherein the first and second toning applicators are angled with respect to a print medium transport for the device.

7. The device of claim 3, wherein the third and fourth toning applicators are angled with respect to the print medium transport for the device.

8. The device of claim 3, further comprising:

a third toning applicator for printing on the print medium;

a fourth toning applicator for printing on the print medium;

wherein the first and second toning applicators print on a first side of the print medium, and wherein the third and fourth toning applicators print on a second side of the print medium.

9. The device of claim 8, wherein the third and fourth toning applicators overlap.

10. The device of claim 1, wherein the powder deposition device is an electrophotographic printer or an electrographic printer.

11. A printer for wide format toning, the printer comprising:

a first toning station for printing on a receiver; and

a second toning station for printing on the receiver, wherein the first toning station overlaps with the second toning station thereby enabling the first and second toning stations to print on a same portion of the receiver.

12. The printer of claim 11, wherein the first and second toning stations overlap approximately one to two inches.

13. The printer of claim 11, wherein the first toning station comprises:

a first toning shell having a magnetic core located within the first toning shell and extending a width of the first toning shell;

a first skive located adjacent the first toning shell, wherein the first skive regulates toner deposition onto a substrate, and wherein the first skive is located closer to the first toning shell at an end of the first toning shell than at a center of the first toning shell.

14. The printer of claim 13, wherein the first skive is stepped thereby creating a plurality of discrete distances between the first skive and the first toning shell, and wherein the discrete distances are smaller at an end of the first toning shell and progressively increase toward the center of a first toning shell.

15. The printer of claim 13, wherein the first skive is tapered so that a distance between the first skive and the first toning shell is smallest at an end of the first toning shell and progressively increases toward a center of the first toning shell.

16. The printer of claim 15, wherein the tapering of the first skive causes a nap height at the end of the first toning shell to be less than a nap height at the center of the first toning shell.

17. The printer of claim 15, wherein the tapering of the first skive is non-linear.

18. The printer of claim 15, wherein the tapering of the first skive is linear.

19. The printer of claim 11, wherein the first toning station comprises:

a first toning shell having a magnetic core located within the first toning shell and extending a width of the first toning shell; and

a first skive located adjacent the first toning shell, wherein the first skive regulates toner deposition onto a substrate, and wherein the first skive is positioned to provide decreased toner deposition at a portion of the first toning shell overlapping with the second toning station.

20. The printer of claim 19, wherein the second toning station comprises:

a second toning shell having a magnetic core located within the second toning shell and extending a width of the second toning shell; and

a second skive located adjacent the second toning shell, wherein the second skive regulates toner deposition onto a substrate, and wherein the second skive is positioned to provide decreased toner deposition at a portion of the second toning shell overlapping with the first toning station.

21. The printer of claim 20, wherein a portion of the first skive overlapping with the second toning station is tapered or stepped.

22. The printer of claim 20, wherein a portion of the second skive overlapping with the first toning station is tapered or stepped.

23. A printing system for printing wide process widths, the system comprising:

a first set of overlapping toning stations; and

a second set of overlapping toning stations, wherein the first and second sets of toning stations deposit toner on a same area of a receiver.

24. The system of claim 23, further comprising:

a first subsystem for measuring a respective amount of toner deposited by each toning station in the first set of overlapping toning stations, and for altering the respective amounts of toner deposited by each toning station in the first set of overlapping toning stations; and

a second subsystem for measuring a respective amount of toner deposited by each toning station in the second set of overlapping toning stations, and for altering the respective amounts of toner deposited by each toning station in the second set of overlapping toning stations.

25. The system of claim 24, wherein the first subsystem includes a densitometer or an electrometer or a powder layer thickness measuring device for measuring the respective amount of toner deposited by at least one of the toning stations in the first set of toning stations, and wherein the second subsystem includes a densitometer or an electrometer or a powder layer thickness measuring device for measuring the respective amount of toner deposited by at least one of the toning stations in the second set of toning stations.

26. The system of claim 24, wherein each toning station in the first and second sets of toning stations includes a densitometer, an electrometer or a powder layer thickness measuring device for measuring the respective amount of toner deposited by the toning station.

27. The system of claim 23, further comprising:

a first subsystem for measuring a respective amount of toner deposited by each toning station in the first set of overlapping toning stations, and for approximately equalizing the respective amounts of toner deposited by each toning station in the first set of overlapping toning stations; and

a second subsystem for measuring a respective amount of toner deposited by each toning station in the second set of overlapping toning stations, and for approximately equalizing the respective amounts of toner deposited by each toning station in the second set of overlapping toning stations.

28. The system of claim 23, further comprising:

a first subsystem for measuring a respective amount of toner deposited by each toning station in the first set of overlapping toning stations, and for adjusting biases of the toning stations in the first set of overlapping toning stations so as to approximately equalize the respective amounts of toner deposited by each toning station in the first set of overlapping toning stations; and

a second subsystem for measuring a respective amount of toner deposited by each toning station in the second set of overlapping toning stations, and for adjusting biases of the toning stations in the second set of overlapping toning stations so as to approximately equalize the respective amounts of toner deposited by each toning station in the second set of overlapping toning stations.

29. The system of claim 23, further comprising:

a measuring subsystem for measuring an amount of toner deposited by the first set of overlapping toning stations relative to an amount of toner deposited by the second set of overlapping toning stations; and

a regulation subsystem for adjusting the amount of toner deposited by the first set of overlapping toning stations relative to the amount of toner deposited by the second set of overlapping toning stations.

30. The system of claim 23, wherein the first set of overlapping toning stations deposits a different toning material than the second set of overlapping toning stations.

31. A method for process control in a printer having multiple sets of overlapping toning stations, the method comprising:

biasing a first set of overlapping toning stations;

biasing a second set of overlapping toning stations to deposit a smaller amount of toner than the first set of overlapping toning stations;

measuring an amount of toner deposited by each toning station in the first set of overlapping toning stations; and

adjusting a bias of at least one toning station in the first set of overlapping toning stations so as to approximately equalize respective amounts of toner deposited by each toning station in the first set of overlapping toning stations.

32. A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 31.

33. The method of claim 31, further comprising:

measuring an amount of toner deposited by each toning station in the second set of overlapping toning stations; and

adjusting a bias of at least one toning station in the second set of toning stations so as to approximately equalize respective amounts of toner deposited by each toning station in the first set of overlapping toning stations.

34. The method of claim 33, wherein measuring an amount of toner deposited by each toning station in the first set of overlapping toning stations comprises taking respective

densitometer or electrometer readings or readings of the thickness of the deposited powder layer for each toning station in the first set of overlapping toning stations, and wherein measuring an amount of toner deposited by each toning station in the second set of overlapping toning stations comprises taking respective densitometer or electrometer readings or readings of the thickness of the deposited powder layer for each toning station in the second set of overlapping toning stations.

35. The method of claim 31, wherein biasing the first set of toning stations comprises biasing the first set of toning stations to a first bias voltage with respect to a substrate bias, and wherein biasing the second set of toning stations comprises biasing the second set of toning stations to a second bias voltage lower in magnitude than two times the first bias voltage, with respect to the substrate bias.

36. The method of claim 31, wherein measuring an amount of toner deposited by each toning station in the first set of overlapping toning stations comprises taking respective densitometer or electrometer readings or readings of the thickness of the deposited powder layer for each toning station in the first set of overlapping toning stations.

37. The method of claim 31, further comprising:

measuring an amount of toner deposited by the first set of overlapping toning stations relative to an amount of toner deposited by the second set of overlapping toning stations; and

adjusting the amount of toner deposited by the first set of overlapping toning stations relative to the amount of toner deposited by the second set of overlapping toning stations.

38. A method for dynamic process control in a powder deposition device having multiple sets of toning applicators, the method comprising:

biasing a first set of toning applicators;

biasing a second set of toning applicators to deposit a smaller amount of toner than the first set of toning applicators;

measuring an amount of toner deposited by the first set of toning applicators relative to an amount of toner deposited by the second set of toning applicators; and

adjusting the amount of toner deposited by the first set of toning applicators relative to the amount of toner deposited by the second set of toning applicators.

39. A computer readable medium having stored therein instructions for causing a processor to execute the method of claim 38.

40. The method of claim 38, wherein adjusting the amount of toner deposited by the first set of toning applicators relative to the amount of toner deposited by the second set of toning applicators comprises adjusting the amount of toner deposited by the first set of toning applicators.

41. The method of claim 38, wherein adjusting the amount of toner deposited by the first set of toning applicators relative to the amount of toner deposited by the second set of toning applicators comprises adjusting the amount of toner deposited by the second set of toning applicators.

42. The method of claim 38, wherein adjusting the amount of toner deposited by the first set of toning applicators relative to the amount of toner deposited by the second set of toning applicators comprises adjusting the amount of toner deposited by both the first and second sets of toning applicators.

43. A method for process control in a printer having multiple sets of toning applicators providing an increased process width, the method comprising:

biasing a first set of toning applicators;

biasing a second set of toning applicators to deposit a smaller amount of toner than the first set of toning applicators;

measuring an amount of toner deposited by each toning applicator in the first set of toning applicators; and

adjusting a bias of at least one toning applicator in the first set of toning applicators so as to approximately equalize respective amounts of toner deposited by each toning applicator in the first set of toning applicators.

44. The method of claim 43, further comprising:

measuring an amount of toner deposited by each toning applicator in the second set of toning applicators; and

adjusting a bias of at least one toning applicator in the second set of toning applicators so as to approximately equalize respective amounts of toner deposited by each toning applicator in the second set of toning applicators.